From the INTERNATIONAL BUREAU

**PCT**

To: 30 SEP 2005

NOTIFICATION OF TRANSMITTAL
OF COPIES OF TRANSLATION
OF THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT
(PCT Rule 72.2)

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26. April 2005
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|---|---|
| Date of mailing *(day/month/year)*<br>21 April 2005 (21.04.2005) | |
| Applicant's or agent's file reference<br>P16316DrB/go | **IMPORTANT NOTIFICATION** |
| International application No.<br>PCT/EP2003/010334 | International filing date *(day/month/year)*<br>17 September 2003 (17.09.2003) |
| Applicant<br>BIOCER-ENTWICKLUNGS-GMBH et al | |

1. **Transmittal of the translation to the applicant.**

The International Bureau transmits herewith a copy of the English translation made by the International Bureau of the international preliminary examination report established by the International Preliminary Examining Authority.

2. **Transmittal of the copy of the translation to the elected Offices.**

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following elected Offices requiring such translation:

None

The following elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AU, EP, JP, US

3. **Reminder regarding translation into (one of) the official language(s) of the elected Office(s).**

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report.

**It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.**

The International Bureau of WIPO
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1211 Geneva 20, Switzerland

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Translation

PCT/EP2003/010334

PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|---|---|---|
| Applicant's or agent's file reference<br>P16316DrB/go | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No.<br>PCT/EP2003/010334 | International filing date (*day/month/year*)<br>17 September 2003 (17.09.2003) | Priority date (*day/month/year*)<br>17 September 2002 (17.09.2002) |
| International Patent Classification (IPC) or national classification and IPC<br>A61L 27/30 | | |
| Applicant<br>BIOCER-ENTWICKLUNGS-GMBH | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

| | |
|---|---|
| Date of submission of the demand<br>16 April 2004 (16.04.2004) | Date of completion of this report<br>18 November 2004 (18.11.2004) |
| Name and mailing address of the IPEA/EP<br><br>Facsimile No. | Authorized officer<br><br>Telephone No. |

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP2003/010334

## I. Basis of the report

1. With regard to the elements of the international application:*

☐ the international application as originally filed

☒ the description:

pages 1-22, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the claims:

pages _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages 1-29, filed with the letter of 09 September 2004 (09.09.2004)

☒ the drawings:

pages 1/1, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP2003/010334

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 29

because:

☒ the said international application, or the said claims Nos. 29 relate to the following subject matter which does not require an international preliminary examination *(specify)*:

See supplemental sheet

☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. _____ are so unclear that no meaningful opinion could be formed *(specify)*:

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. _____.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

**Supplemental Box**
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: III

1 Claim 29 relates to subject matter which, in the opinion of this Authority, falls under PCT Rule 67.1(iv). Consequently, no expert opinion has been established in respect of the industrial applicability of the subject matter of said claim (PCT Article 34(4)(a)(i)).

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Claims | 1-29 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | 1-29 | YES |
| | Claims | | NO |
| Industrial applicability (IA) | Claims | 1-28 | YES |
| | Claims | | NO |

2. Citations and explanations

1 Reference is made to the following documents cited in the international search report and the passages indicated therein:

D1: US-A-5 612 049
D2: US-B-6 312 472
D3: US-A-4 954 476
D4: PATENT ABSTRACTS OF JAPAN vol. 1998, no. 01 & JP 9 249981 A
D5: EP-A-0 409 810
D6: US-A-6 017 553
D7: US-A-5 855 612
D8: EP-A-0 222 717
D9: US-B-6 313 064

1.1 D1 discloses implant coating methods using a titanium oxide precursor sol, optionally in combination with ions of Ca, Na, K, Al, B or Mg.

1.2 D2 discloses implants having a surface layer comprising a $TiO_2$-Ca ceramic matrix.

1.3 D2 discloses a product containing titanium oxide as the main product, said product being obtained by

dissolving titanic acids and adding water-soluble flocculents such as, for example, salts of vanadium, molybdenum and tungsten, followed by calcination, the resultant product being used for coatings.

1.4 D4 discloses stainless steel which receives antibacterial properties (Cu ions) following acid treatment. Titanium is also present.

1.5 D5 discloses implants in which the titanium surface is oxidized to titanium dioxide and ions of, for example, Ca, Mg or Zn, are integrated.

1.6 D6 discloses a method for producing antimicrobial materials in which metal ions are deposited in a Ti-O matrix.

1.7 D7 discloses titanium implants with a hydrated titanium oxide layer containing metal ions, such as Ta, Sn, Ti, Si, Zr, Li or Na.

1.8 D8 discloses titanium implants with a titanium oxide layer containing only traces of other metals, such as, for example, copper.

1.9 D9 discloses antibacterial copper alloys with a titanium oxide coating. Said alloys may contain zinc or silver and can be used for sterile rooms (for example, in the area of medical article manufacture) or in everyday articles.

2 Novelty and inventive step (PCT Article 33(2) and (3))

Claim 1 relates to a process for producing a

titanium oxide coating in which a titanium oxide precursor is used as the parent material in conjunction with a metal salt, the latter exerting antimicrobial activity under physiological conditions, depositing this preparation on an implant and drying the coating. Claim 22 relates to the corresponding implant and claim 29 relates to the use thereof.

D1-D3, D5 and D7 differ therefrom in that antimicrobial salts are absent, D4 and D6 do not disclose a titanium oxide coating with homogeneously distributed metal salts, D8 is characterized in that copper is present in trace amounts only and D9 does not relate to medical implants. The subject matter of claims 1-29 therefore appears to be novel.

Since none of the citations D1-D9 relates to the production of improved antimicrobial implants or suggests the homogeneous distribution of antimicrobial metal salts, the subject matter of claims 1-29 also appears to involve an inventive step.